

## EXHIBIT 1



**U.S. Department of Justice**

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March 29, 2023

**Via Email**

Counsel for Defendants

**Re: *United States v. Liggins, et al.*, 21 CR 618**  
**Expert Disclosure of Caryn Tucker**

Dear Counsel:

In accordance with Federal Rule of Criminal Procedure 16(a)(1)(G), the government notifies you that it intends to call Caryn Tucker at trial to offer opinions and testimony in the field of firearms/toolmarks examination pursuant to Federal Rule of Evidence 702.

Further, the government reiterates its request, pursuant to Rule 16(b)(1)(B) and (C), that you provide us with the name, qualifications, summary of anticipated testimony, and any reports or analysis generated by your expert(s) as soon as possible.

***Qualifications***

Ms. Tucker is currently employed as a Training Coordinator with the Illinois State Police (ISP), Forensic Science Command in Chicago, Illinois. She has been so employed since October 2019. In this position, Ms. Tucker trains new examiners on firearm and toolmark identification, provides continuous education for current examiners, and provides technical assistance to the Forensic Sciences Command. Among other duties, Ms. Tucker conducts forensic analysis on items including submitted firearms and toolmarks evidence, and issues reports on those analysis and findings.

Ms. Tucker previously held positions at ISP including: Group Supervisor (July 2018 – October 2019), Forensic Scientist (April 1999 – July 2018), Evidence Technician (April 1997—April 1999) and the Illinois Statewide Integrated Ballistic Identification System (IBIS) Coordinator (April 2004 –November 2009).

Among other professional positions, Ms. Tucker has served as an Executive Member/Standards & Controls Committee Chair for the National Integrated Ballistic Information

Network (NIBIN), from October 2007—November 2009, has been a Pattern Evidence Instructor at the University of Illinois at Chicago from 2006-2011 and 2019 to present, and has been a Pattern Evidence Instructor at Loyola University from November 2020 to present. Ms. Tucker has completed additional training in relation to her duties conducting forensic analysis in firearms and toolmarks, including attending armorers training conducted by multiple firearms manufacturers and attending ISP's Firearm and Toolmark Identification Training Program from April 1999 through March 2001. As detailed in her attached Curriculum Vitae, Ms. Tucker has attended several trainings and conferences on the subject of firearm and toolmark training, including trainings presented by the FBI, ATF and Chicago Police Department. She has also toured multiple firearm and ammunition manufacturer plants and facilities.

Ms. Tucker graduated with a Bachelor of Science in Biology from Quincy University in Illinois in August 1995. Ms. Tucker completed a Master of Science in Forensic Science at the University of Illinois in Chicago, in December 2003.

Ms. Tucker has been qualified and testified as an expert on firearms and toolmarks evidence in the past, and during the four years prior to the October 10, 2023 trial date, has testified as an expert in the following cases (trial unless otherwise indicated):

- *State of Illinois v. Dwane Mallet*, 17 CR 20566 (December 2019);
- *State of Illinois v. David Brown*, 15 CR 1567001 (January 2022);
- *State of Illinois v. Rickey Winfield*, 15 CR 1406601 (March 2022) (*Frye* hearing);
- *State of Illinois v. David Bush*, 15 CR 0844301 (October 2022); and
- *State of Illinois v. Ronnie Burnett*, 18 CR 8814 (October 2022).

A detailed list of Ms. Tucker's education and professional qualifications and experience is provided in her Curriculum Vitae, attached and incorporated by reference.

### ***Anticipated Testimony***

#### ***Overview of Firearms and Tool Marks Evidence***

Firearms and toolmark identification is a sub-discipline of the forensic sciences. Its goals including determine whether a fired bullet or cartridge case was or was not fired by a particular firearm, or by the same firearm as another bullet or cartridge case. Firearms and toolmarks identification is an empirical and analytical analysis conducted to examine the toolmarks on various evidence samples to determine if the toolmarks on those items were associated with a particular tool.

The government expects testimony regarding how firearms generally operate. The government also expects testimony regarding ammunition, its component parts, and the firing process (e.g., a cartridge is a single unit of unfired ammunition; a bullet is one component of the entire cartridge). A cartridge is a single unit of ammunition that consists of a cartridge case,

which encases the gunpowder, a primer, and a bullet/projectile seated into the opening of the cartridge case. When a cartridge is discharged, the firing pin of the firearm strikes the primer. This is the process that leaves the firing pin impression on the primer of the cartridge case head, which appears as an indentation in the area of the primer. The primer is a pressure sensitive compound which creates a small flame or spark when pinched. This small flame/spark ignites the gunpowder. When the gunpowder burns, it produces a high-pressure gas situation within the cartridge case, which pushes the bullet down the barrel of the firearm. This is where the fired bullet is marked by the inside of the barrel bore of the firearm. At the same time during the firing process, the high-pressure gases push the cartridge case against the rear part of the inside of the firearm (i.e., the breech face). This is where the breech face markings from the gun are imparted onto the cartridge case. When a semiautomatic pistol is fired, the cartridge case (with the primer as a component part) is ejected (i.e., a fired cartridge case) from the firearm. Most cartridges having markings from the manufacturer on the head of the cartridge which often include identifying information about the manufacturer and caliber.

When a bullet leaves the firearm, it has markings from the inside of the barrel that are imparted onto it through its movement down and out of the barrel bore. These markings left on the bearing surface of the bullet are called rifling marks. Bullets come in different calibers, sizes, and types/shapes (i.e., morphologies). Rifling is the combination of the raised and lowered areas on the inside of a gun barrel, called lands and grooves, that spiral down the length of the barrel. When a bullet travels down the length of a barrel, the rifling helps impart a spin on the bullet that provides stability in flight, similar to a spiraling football when thrown. The class characteristic of rifling is determined by the manufacturer, i.e., the number of lands (a raised area) and grooves (a lowered area) in the barrel, the width of the lands and grooves, and the direction of the twist. The direction of twist could be clockwise down the barrel (i.e., right-hand twist), or counterclockwise down the barrel (i.e., left-hand twist). When the bullet travels down the barrel, the rifling puts a negative impression onto the fired bullet, which appear as land impressions and groove impressions.

The breech face is the rearmost part of the firearm where the cartridge sits before it is fired. There is a hole in the breech face, called a firing pin aperture, that the firing pin protrudes from during the firing process to strike the primer on the cartridge. Firing pins can have different shapes, including hemispherical or circular, squared, elliptical, or wedge shapes, and can therefore leave different shaped impressions. There are also additional marks that can be imparted onto the head stamp area, the cartridge case body and the primer during the firing process.

A toolmark is created when two items come into forcible contact with each other, whereby the harder of the two objects, the tool, leaves marks on the softer of the two objects. In the context of firearms, a firearm is the tool which imparts its marks on a bullet and/or cartridge case when the gun is fired. There are two types of toolmarks, a striated toolmark and an impression toolmark. A striated toolmark is caused when the force of the tool is put across or parallel to the surface of an object. In the context of firearms, since a fired bullet travels down the length of the barrel, it moves parallel to the length of the barrel, and the gun imparts a striated toolmark on the fired bullet. An impression toolmark is caused when the force of the item is

perpendicular to the item being struck. In the context of firearms, when firing a cartridge the firing pin strikes the primer, and the breech face strikes the head/primer of the cartridge case and leaves an impression-type toolmark on the head/primer of the fired cartridge case. Examiners use a comparison microscope to examine these toolmarks and conduct side-by-side comparisons.

When determining whether a fired cartridge case was fired from a known firearm, the examiner can test fire the known firearm to create a fired cartridge case for comparison. To conduct a test fire, the examiner examines the firearm to ensure it is safe and operable, and then fires two or more rounds of ammunition into a water tank. Firing into a water tank slows down the bullet and preserves its condition for comparison.

When determining whether a fired cartridge case was fired from the same firearm as another fired cartridge case, the examiner looks for a reproducing pattern of class and individual characteristics between the two items. Class characteristics are general features determined prior to manufacture or as a result of the manufacturing process. In the context of firearms, examples include caliber, rifling characteristics (i.e., the number of lands and grooves in the barrel, the widths of the lands and grooves in the barrel, and direction of twist), the shape of the firing pin, and the breech face marks pattern.

If two fired cartridge cases possess different class characteristics, they were not fired by the same firearm. If two fired cartridge cases possess similar class characteristics, an examiner utilizes a comparison microscope to look for a reproducing pattern of individual characteristics. Individual characteristics are microscopic irregularities and imperfections that distinguish it from others of a similar type. In the context of a fired cartridge case, an examiner looks at the microscopic surface of the firing pin impression and the breech face marks that is either impressed, striated, or a combination of both, onto the surface of the cartridge case. In the context of a fired bullet, the examiner looks for a sufficiently similar reproducing pattern of striated toolmarks around the entire surface of the bullet.

A firearm and toolmark examination can lead to three different conclusions. An identification means that after comparing the reproducing patterns of class and individual characteristics between two items, the examiner concludes that the toolmarks left on those items were made by the same source. This conclusion is verified by a second examiner. An elimination means that there is a difference of class characteristics and the toolmarks left on the compared items were made by a different source. An elimination conclusion can also be reached on difference of individual characteristics; however, this conclusion would need verification by a second examiner. The third result is inconclusive, meaning that there is a reproducing pattern of class characteristics, but the pattern of individual characteristics are not of a quality or quantity allowing for a more definitive finding. As a result, the examiner can neither identify nor eliminate toolmarks as being made by the same source. An additional evaluation, but not conclusion, that can be reached is unsuitable, which occurs when there is nothing of microscopic value for comparison.

### *Opinions, Bases, and Reasons*

Ms. Tucker will testify regarding the analysis and findings described in the attached laboratory reports and notes and incorporated by reference. A complete statement of Ms.

Tucker's opinions, as well as the bases and reasons for them, are outlined in the enclosed reports and supporting documents.

In summary, Ms. Tucker will testify regarding examinations of the following:

- a Springfield Armory 9mm Luger Semiautomatic pistol bearing serial number S3655666 (Item 1), from which Ms. Tucker test fired four rounds, two using Speer ammunition (Items #1A1 and #1A2) and two using Sellier & Bellot ammunition (Items #1A3 and #1A4);
- fired cartridge casings recovered from the street near 70 E. Oak Street<sup>1</sup> (Items 5-1, 5-2, 5-3, 5-4, 5-5);
- a Blazer 9mm Luger fired cartridge casing recovered from the street near 70 E. Oak Street (Item 6);
- a 9mm Luger cartridge casing manufactured by Winchester, recovered from the street near 70 E. Oak Street (Item 7);
- a Sellier & Bellot 9mm Luger fired cartridge case recovered from the street near 70 E. Oak Street (Item 8);
- a Fiocchi 357 Sig fired cartridge case recovered from the street near 68 E. Oak Street (Item 12); and
- a Fiocchi 357 Sig fired cartridge case recovered from the passenger side exterior windshield wiper housing area of a Chrysler 300 (Item 13).

Ms. Tucker concluded that Items 5-1, 5-2, 5-3, 5-4, 5-5 and Item 7 were fired from the same 9mm Luger Semiautomatic pistol identified as Item 1 from which she had test fired item #1A3.

Ms. Tucker concluded based on a comparison of class characteristics that the fired cartridge casing identified Item 6 was not fired from the 9mm Luger Semiautomatic pistol and was not fired from the same firearm as Item 8.

Ms. Tucker's examination was inconclusive as to whether the fired cartridge casing identified as Item 8 was or was not fired from the 9mm Luger Semiautomatic pistol identified as Item 1.

Ms. Tucker's examination concluded that Item 12 and Item 13 were fired from the same firearm.

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<sup>1</sup> Testimony and evidence regarding the location of recovery of the following items may be introduced through government trial witnesses other than Ms. Tucker. The circumstances of the items' recovery are included here for ease of reference.

Should we receive additional information relating to this expert, we will supplement this disclosure accordingly, consistent with our obligations under Federal Rule of Criminal Procedure 16. If believe this disclosure is insufficient under Rule 16, please advise us so that we may further discuss the matter. Please note that the government still reserves its right to provide notice prior to trial of any additional expert(s) it intends to call at trial.

Very truly yours,

MORRIS PASQUAL  
Acting United States Attorney

By: /s/Ann Marie E. Ursini  
ANN MARIE E. URSINI  
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Reviewed and approved by:

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